

Society Meetings and Events

2014

Friday 28 February

Mary Cartwright
Lecture, York
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Monday 31 March

Northern Regional
Meeting, Durham

Tuesday 8 April

Society Meeting
at BMC, London
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14–17 April

Invited Lectures,
University of
East Anglia
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Friday 25 April

Women in
Mathematics Day,
London

NEWSLETTER ONLINE:

newsletter.lms.ac.uk

RETIRING MEMBERS OF COUNCIL AND COMMITTEE CHAIRS

GRAEME SEGAL (President)

After serving for two years, Dr Graeme Segal, FRS, handed over the LMS Presidency at the AGM in November 2013. Prior to being President, he had served for two years as a Member-at-Large of Council. Dr Segal is held in high esteem across the whole mathematics community and his standing, as well as his significant efforts, have been enormously valuable to the Society in meeting its objectives.

During his tenure as LMS President he has continued the work of previous presidents to increase member engagement with the Society and to modernise the way the Society operates. Under Dr Segal's presidency attendance at LMS events, both popular and research, has risen markedly. Almost 200 people at the AGM heard Dr Segal's presidential lecture, which was considered to be a masterly combination of philosophical discussion and mathematical precision.

Dr Segal has been actively involved with, and supported, improvements to the LMS website and he has also been closely involved in developments to mark the LMS 150th anniversary, which takes place in 2015. The Society under Dr Segal also

introduced electronic voting for elections, which has seen turnout more than double.

The past two years have been a challenging period for mathematical sciences research policy in the UK. Dr Segal has led the Society in dealing with a range of important issues: the introduction of open access publishing to which the Society made significant policy submissions, the issues surrounding impact and the 2014 REF, the consequences of changes in science funding and university student tuition fees, and the EPSRC Shaping Capability agenda. Dr Segal also worked closely with the Education Secretary and met with the Department for Education to secure LMS involvement in the administration of mathematics teacher training bursaries.

Under Dr Segal's leadership the Society has sought a more evidence-based approach to its policy business. Data reports on women in mathematics and university staff numbers have been produced, and this approach will inform future LMS policy work. Dr Segal was also keen to ensure that the Society places a strong emphasis on young and early career mathematicians. Under his leadership, the criteria for mem-

cont'd

bership of the Society were broadened to encourage a younger membership, a Scheme for undergraduate research bursaries has been introduced, and further schemes for undergraduate and early career mathematicians are planned, to help ensure that the next generation of mathematicians are supported to achieve the best possible future for mathematics.

Dr Segal has represented the Society with enormous distinction, not only in the UK but also abroad. He led the LMS delegation to the

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2012 European Congress of Mathematicians in Poland. During his presidency he was also very active internationally, representing the Society at meetings of European Society Presidents and at high-profile awards ceremonies.

He has taken an active interest in all areas of LMS business and has provided the Society with stable leadership and strong direction. His love of mathematics, ability to explain deep ideas in truly transparent ways and his imagination all played a critical role in his success in leading the LMS.

The Society would like to thank him for his service and wish him well for the future. At the AGM, Dr Segal handed over the badge of Presidential Office to Professor Terry Lyons.

JOHN JONES (Publications Secretary)

Professor John Jones stepped down as LMS Publications Secretary at the 2013 AGM, having served the Society in this role from 2009 to 2013.

Over the past four years, Professor Jones has guided publications business with a pragmatic and prudent approach. He instituted a long-term review of the Society's strategic approach to its publications activities, culminating in 2012 with the current LMS Publication Strategy. He also oversaw the establishment in 2013 of the Transactions of the LMS, the Society's first fully gold open access journal, and in the same year led the introduction of free online access to LMS journals for all members, a significant new membership benefit for us all.

As Publications Secretary, Professor Jones actively sought to improve dialogue between editorial advisors, editors and the LMS' publishing partners. Of particular note in this direction was the introduction during his tenure of a new online article management system. This has greatly improved many of the processes involved in the submission, review and publication of articles in the various journals managed by the LMS.

In addition to his work as Publications Secretary, Professor Jones has also served the LMS as a member of the Library Committee, the International Affairs Committee and the

Personnel Committee.

He steps down to pursue other commitments and the Society would like to place on record its thanks for his work during this time, and wish him well for the future.

SIMON DONALDSON AND ARI LAPTEV (Members-at-large)

Professor Sir Simon Donaldson, FRS, and Professor Ari Laptev both stepped down as members-at-large of Council at the 2013 AGM. Council wishes to recognise the service both have given to the Society and to the wider mathematics community. Professor Donaldson was elected in 2009 and steps down now owing to other commitments. His presence on Council has brought great mathematical distinction, and his extensive knowledge of the mathematical landscape has been invaluable to Programme Committee. His departure was marked by a memorable and very well received lecture at the 2013 AGM.

Professor Ari Laptev was first elected to Council in 2007 and he leaves Council having served the maximum time allowed under the by-laws. Having previously been President of the European Mathematical Society, Professor Laptev brought valuable experience to the Society's International Affairs Committee. Professor Laptev also served on the Programme Committee.

The LMS thanks them both for the broad and varied support that they have given to

the Society in achieving its charitable aims and supporting mathematics more generally.

TOM MELHAM (Computer Science Committee)

Professor Tom Melham, FRSE, has stepped down as Chair of the Computer Science Committee having completed his term of office. He has chaired the Committee since January 2009, having joined it in January 2005.

During his time as Chair he significantly raised the profile of the computer science/mathematics interface within the LMS. Under his leadership the Committee introduced the annual Computer Science Colloquium, which has attracted strong speakers and audiences. He also introduced the Knowledge Transfer Papers programme in collaboration with the Smith Institute, and expanded the Committee's Scheme 7 Grants programme to reflect the importance placed by the Society on research in the computer science area.

As Chair, Professor Melham maintained strong relationships with groupings within the computing science community, in particular the Smith Institute, the Academy of Computing, BCS-FACS and BCTCS. He also provided a link to the Computer Science Strategic Advisory Team (SAT) at EPSRC.

The Society would like to place on record its thanks to Professor Melham for his years of service to the Committee.



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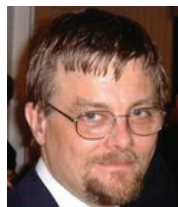
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COUNCIL MEMBERS



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President
University of Oxford



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Vice President
University of Glasgow



Professor John Greenlees
Vice President
University of Sheffield



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Treasurer
University of Birmingham



Professor Stephen Huggett
General Secretary
University of Plymouth



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Programme Secretary
Queen Mary, University
of London



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Education Secretary
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Open University



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Member-at-Large
University of Durham



Professor Ulrike Tillmann
Member-at-Large
University of Oxford



Professor Alexander
Veselov
Member-at-Large
Loughborough University

2013–14 LMS COUNCIL

As a result of the annual election, membership of the LMS Council is the following:

President	Professor T.J. Lyons, FRS (University of Oxford)
Vice-Presidents	Professor K.A. Brown, FRSE (University of Glasgow)
	Professor J.P.C. Greenlees (University of Sheffield)
Treasurer	Professor R.T. Curtis (University of Birmingham)
General Secretary	Professor S.A. Huggett (University of Plymouth)
Programme Secretary	Professor R.A. Wilson (Queen Mary, University of London)
Publications Secretary	Professor J.R. Hunton (University of Durham)
Education Secretary	Professor F.A. Rogers (King's College London)
Member-at-large (Librarian)	Dr J.E. Barrow-Green (Open University)
Members-at-large	Dr F.W. Clarke (University of Swansea)
	Professor D.M. Evans (University of East Anglia)
	*Dr C. A. Hobbs (University of the West of England)
	Professor E.L. Mansfield (University of Kent)
	*Professor B. Pelloni (University of Reading)
	*Dr C.M. Roney-Dougal (University of St Andrews)
	*Professor M.A. Singer (University College, London)
	Professor G.M. Stallard (Open University)
	Professor I.A. Stewart (University of Durham)
	*Professor U.L. Tillmann, FRS (University of Oxford)
	*Professor A.P. Veselov (Loughborough University)

*Members continuing the second year of their two-year election in 2012.

LMS Nominating Committee

Also at the AGM, Martin Bridson (University of Oxford) and Paul Glendinning (University of Manchester) were elected to the Nominating Committee for three year terms of office.

Continuing members of the Nominating Committee are Penny Davies (Chair), Keith Ball, Frances Kirwan, Michael Prest and David Tranah. Council will also appoint a representative.

LONGSTANDING MEMBERS

The following is a list of mathematicians who have completed fifty years or more of membership of the London Mathematical Society, with their date of election:

17 Mar 1943	Dyson, F.J.	20 Dec 1951	Herszberg, J.
15 Jun 1944	Williams, A.E.	17 Jan 1952	Wilson, D.H.
25 Jan 1945	Ollerenshaw, K.	15 Feb 1952	Shephard, G.C.
23 May 1946	Huppert, E.L.	20 Mar 1952	Swinerton-Dyer, H.P.F.
16 Jan 1947	Macbeath, A.M.	20 Nov 1952	Knight, A.J.
20 Mar 1947	Hayman, W.K.	18 Dec 1952	Reeve, J.E.
19 Jun 1947	Cassels, J.W.S.	18 Jun 1953	Marstrand, J.M.
18 Mar 1948	Isaacs, G.L.	18 Jun 1953	Rayner, M.E.
18 Mar 1948	Reade, M.O.	17 Dec 1953	Ringrose, J.R.
18 Nov 1948	Mullender, P.	17 Dec 1953	Samet, P.A.
13 Dec 1948	Fishel, B.	21 Jan 1954	Zeeman, E.C.
20 Jan 1949	Borwein, D.	18 Feb 1954	Cohen, D.E.
19 Jan 1950	Shepherdson, J.C.	18 Feb 1954	James, I.M.
16 Feb 1950	Lehner, J.	17 Jun 1954	Taylor, S.J.
23 Mar 1950	Ponting, F.W.	25 Nov 1954	Amson, J.C.
17 May 1951	Roth, K.F.	25 Nov 1954	Halberstam, H.
20 Dec 1951	Dowker, Y.N.	27 Jan 1955	Atiyah, M.F.

1	24 Feb 1955	Rayner, F.J.	21 Dec 1961	Baker, J.W.	50
2	24 Mar 1955	Farahat, H.K.	21 Dec 1961	Barry, P.D.	51
3	12 May 1955	Harrop, R.	21 Dec 1961	Davies, R.O.	52
4	12 May 1955	Murdoch, B.H.	21 Dec 1961	Rutter, J.W.	53
5	12 May 1955	Wall, G.E.	21 Dec 1961	Sands, A.D.	54
6	15 Dec 1955	Armitage, J.V.	21 Dec 1961	Wall, C.T.C.	55
7	19 Jan 1956	Bowers, J.F.	18 Jan 1962	Ezeilo J.O.C.	56
8	15 Mar 1956	Edmunds, D.E.	18 Jan 1962	Kingman, J.F.C.	57
9	19 Apr 1956	Penrose, R.	15 Mar 1962	Baumslog, B.	58
10	14 Jun 1956	Collins, W.D.	26 Apr 1962	Cohn, J.H.E.	59
11	14 Jun 1956	Perry, R.L.	26 Apr 1962	Williams, S.O.	60
12	15 Nov 1956	Edwards, D.A.	17 May 1962	Lue, A.S.T.	61
13	14 Mar 1957	Brown, R.	17 May 1962	Mullin, A.A.	62
14	13 Jun 1957	Brown, A.L.	17 May 1962	Thompson, A.C.	63
15	18 Jun 1957	Russell, D.C.	21 Jun 1962	Peters, J.E.	64
16	21 Nov 1957	Wallington, J.E.	15 Nov 1962	Gaffney, M.P.	65
17	19 Dec 1957	Longdon, L.W.	15 Nov 1962	Riles, J.B.	66
18	19 Dec 1957	Mohamed, I.J.	20 Dec 1962	Douglas, A.J.	67
19	19 Dec 1957	Monk, D.	20 Dec 1962	Pears, A.R.	68
20	19 Dec 1957	Newman, M.F.	20 Dec 1962	Roberts, J.B.	69
21	19 Dec 1957	Schneider, H.	20 Dec 1962	Wallace, E.W.	70
22	20 Mar 1958	Keedwell, A.D.	17 Jan 1963	Anderson, J.M.	71
23	20 Mar 1958	Wallace, D.A.R.	17 Jan 1963	Beardon, A.F.	72
24	17 Apr 1958	Macdonald, I.G.	17 Jan 1963	Blyth, T.S.	73
25	15 May 1958	Foster, D.M.E.	17 Jan 1963	Dugdale, J.K.	74
26	19 Jun 1958	Green, J.A.	17 Jan 1963	Epstein, D.B.A.	75
27	20 Nov 1958	Rigby, J.F.	17 Jan 1963	Garling, D.J.H.	76
28	17 Dec 1958	De Barra, G.	17 Jan 1963	Piper, F.C.	77
29	18 Dec 1958	Birch, B.J.	17 Jan 1963	Robinson, W.J.	78
30	18 Dec 1958	Higgins, P.J.	17 Jan 1963	Whittington, J.E.	79
31	18 Dec 1958	McLeod, J.B.	18 Apr 1963	Bernau, S.J.	80
32	15 Jan 1959	Blackburn, N.	18 Apr 1963	Mazhar, S.M.	81
33	16 Apr 1959	Burgess, D.A.	18 Apr 1963	Sutherland, W.A.	82
34	16 Apr 1959	Manogue, J.F.	15 May 1963	Ault, J.C.	83
35	21 May 1959	Ingram, G.	16 May 1963	Harte, R.E.	84
36	18 Jun 1959	Carter, R.W.	16 May 1963	Lee, P.M.	85
37	17 Dec 1959	Eames, W.P.	16 May 1963	Sondheimer, E.H.	86
38	17 Dec 1959	Hoskins, R.F.	16 May 1963	Weinmann, A.	87
39	17 Dec 1959	West, A.	16 May 1963	White, D.J.	88
40	17 Mar 1960	Guy, R.K.	20 Jun 1963	Duren, P.L.	89
41	17 Mar 1960	Harris, D.J.	20 Jun 1963	Gehring, F.W.	90
42	18 Mar 1960	Scourfield, E.J.	20 Jun 1963	Norman, C.W.	91
43	18 Mar 1960	Strauss, D.	20 Jun 1963	Pym, J.S.	92
44	19 May 1960	Hoare, A.H.M.	20 Jun 1963	Rogosinski, H.P.	93
45	17 Nov 1960	Morris, A.O.	21 Nov 1963	Bechtell, H.F.	94
46	15 Dec 1960	Turner-Smith, R.F.	21 Nov 1963	Curtis, C.W.	95
47	16 Mar 1961	Rhodes, F.	21 Nov 1963	Eggan, L.C.	96
48	18 May 1961	Sklar, A.	21 Nov 1963	Lowe, P.G.	97
49	15 Jun 1961	Button, L.G.	19 Dec 1963	Gani, J.M.	98
	15 Jun 1961	Dey, I.M.S.	19 Dec 1963	Heywood, P.	
	15 Jun 1961	Dlab, V.	19 Dec 1963	Knowles, J.D.	
	15 Jun 1961	Robertson, S.A.	19 Dec 1963	Watters, J.F.	
	16 Nov 1961	Croft, H.T.			

MATHEMATICS POLICY ROUND-UP

December 2013

RESEARCH

£350 million for PhD training

Universities and Science Minister, David Willets, has announced the UK's largest investment in engineering and physical sciences PhDs to train scientists and engineers in Centres for Doctoral Training (CDTs). It will fund over 3,500 students at over 70 new CDTs spread across 24 universities. Centres supported in the mathematical sciences include:

- Professor Colin Pease (University of Oxford) Industrially Focused Mathematical Modelling
- Professor Christopher Holmes (University of Oxford) Next Generation Statistical Science: The Oxford–Warwick Statistics Programme
- Professor Gui-Qiang George Chen (University of Oxford) Partial Differential Equations: Analysis and Applications
- Professor Robert MacKay (University of Warwick) Mathematics for Real-World Systems
- Professor Jonathan Tawn (Lancaster University) Statistics & Operational Research in Partnership with Industry (STOR-i)
- Professor John Vassilicos (Imperial College London) Fluid Dynamics across Scales
- Professor Dan Crisan (Imperial College London) Mathematics of Planet Earth (with the University of Reading)

More information is available at <http://tinyurl.com/obl4m6s>.

Research Excellence Framework (REF) 2014

The deadline for submissions to the 2014 REF was Friday 29 November. The first sub-panel meetings will take place in January 2014 and the outcomes will be published in December 2014. More information is available at www.ref.ac.uk/timetable.

HIGHER EDUCATION

LMS publishes data report

The LMS has published a data report entitled Academic Mathematical Sciences Staff in UK Higher Education Institutions. This is the first

in a series of LMS data reports. This report presents the latest available data on academic and research staff recorded under the UK Higher Education Institute (HEI) mathematics cost centre and in a number of selected other cost centres. The data source for the report is the Higher Education Statistics Agency (HESA). HESA is the central source for the collection and dissemination of statistics about publicly funded UK higher education. The full report is available at from www.lms.ac.uk/sites/lms.ac.uk/files/files/reports/LMS-BTL-42Report.pdf.

SCHOOLS AND COLLEGES

Changes to early entry at GCSE

From 29 September 2013, only a student's first entry to a GCSE examination will count in their school's performance tables.

This change is being made to address the significant increase in early entry in recent years. In summer 2013, 23% of mathematics entries (170,537 entries) and 10% of English entries (70,134) were from students who were not yet at the end of their key stage 4 study. Overall, entries from 15-year-olds increased by 39% from 2012 to 2013.

From a Department of Education press release: "This is of particular concern in mathematics, where there is high progression from A*/A grade at GCSE to A level, but low progression from grades B and C.

For the mathematics 'linked pair', GCSE students need to take, and achieve a grade, in both qualifications (methods and applications). The highest grade then counts in performance measures. So a C in methods and a U in applications means the C counts as the mathematics result for performance tables purposes. We are not changing this position, provided the pupil does not retake either of the qualifications.

If a student re-sat either of the two linked pair GCSEs, the first attempt at that qualification would be taken into account (alongside the grade from the other qualification) in determining the grade that counts in performance measures, with the highest of the two being recorded as the mathematics grade.

The linked pair qualification will discount against a normal mathematics qualification, so

1 if a student took one of the linked pair qualifica-
2 tions in November 2013 and the general math-
3 ematics GCSE in June 2014, the linked pair grade
4 would be entered in the tables (provided they
5 also entered the other linked pair qualification).
6 If the student did not also achieve a grade in the
7 other linked pair qualification no grade would
8 be entered in the performance tables."

9 More information is available at <http://tinyurl.com/l76j79>.

12 OECD publishes 2012 PISA Results

13 PISA 2012 is the programme's 5th survey. It
14 assessed the competencies of 15-year-olds in
15 reading, mathematics and science (with a focus
16 on mathematics) in 65 countries and economies.
17 Around 510,000 students between the ages of
18 15 years 3 months and 16 years 2 months partici-
19 pated in the assessment, representing about 28
20 million 15-year-olds globally.

8 21 The students took a paper-based test that
22 lasted two hours. The tests were a mixture of
23 open-ended and multiple-choice questions that
24 were organised in groups based on a passage
25 setting out a real-life situation. A total of about
26 390 minutes of test items were covered. Students
27 took different combinations of different tests.
28 They and their school principals also answered
29 questionnaires to provide information about the
30 students' backgrounds, schools and learning ex-
31 periences and about the broader school system
32 and learning environment.

33 The UK performs around the average in math-
34 ematics and reading and above average in
35 science, compared with the 34 OECD countries
36 that participated in the 2012 PISA assessment of
37 15-year-olds. The United Kingdom is listed 26th
38 in mathematics performance, but because results
39 are based on a sample, its relative position could
40 be between 23rd and 31st.

41 More information is available at <http://tinyurl.com/nrune6p>.

44 OECD to launch PISA test for schools in England in 2014

45 Individual secondary schools in England will from
46 next year be able to take a version of the OECD's
47 PISA test in order to benchmark themselves
48 against the world's best education systems.

The OECD PISA-Based Test for Schools aims to
help teachers and school leaders see how their
15-year old students can apply their knowledge
of reading, mathematics and science to meet
real-life challenges.

To get a more complete picture of the quality
of education in the school, they will also get con-
fidential feedback from students on questions
such as how much they enjoy school and the
classroom environment. Together with infor-
mation from the school leaders about the edu-
cational practices in the schools, this will allow
them to see how well they are doing compared
with other similar schools.

More information is available at www.oecd.org/pisa/pisa-basedtestforschools/.

OTHER

Open Access: Government and RCUK response to BIS select Committee report.

The Business, Innovation and Skills Select
Committee has published the government
response and RCUK response to the Committee's
Fifth Report of Session 2013–14, Open Access.

Commenting on the government response,
Adrian Bailey MP, Chair of the Business, Innova-
tion and Skills Committee, said:

"I am pleased that the Government has
embraced many of our recommendations. The
following aspects of the response are to be
welcomed, in particular:

- The government's statement that publishers must "immediately develop" sustainable solutions to "improve on the transparency" of the effect of payment of Article Processing Charges (APCs) on subscription rates to counter double dipping by publishers. The Government's important clarification that it "does not consider it appropriate for publishers to rely on retrospectively amortising their APC revenue to discount global subscription rates" will provide clear direction for publishers in this respect.
- The government's agreement that higher education institutions should not be required by publishers to accept non-disclosure clauses in publishing contracts which involve public funds.
- The confirmation that authors have freedom

cont'd p.10

LMS UNDERGRADUATE RESEARCH BURSARIES IN MATHEMATICS 2014



Nature of Awards

The purpose of the awards is to give experience of research to undergraduates with research potential and to encourage them to consider a career in scientific research.

The awards provide support for the student at a rate of £180 per week (or £190 per week in London), for a period of between six and eight weeks.

The closing date for receipt of applications is 5 pm Friday 7 February 2014.

Eligibility

- Open to Undergraduate Students in the **intermediate years** (i.e. 2/3, 2/4 or 3/4) of their undergraduate degree to undertake the project during the summer vacation between their intermediate years. Students in the final year of their degree intending to undertake a **taught Masters** degree may apply. (*Applications on behalf of first-year undergraduates will not be considered.*)
- **Mature students** are eligible to apply, but must not have a previous degree in any subject.
- Students must be registered at a **UK institution** for the majority of their undergraduate degree.
- Bursaries will not be awarded for projects that are a **part of degree work**, or that take place overseas for more than 50% of the project time.
- Researchers in Mathematics at universities and research institutions within the UK are eligible to apply. Interdisciplinary projects will be considered providing the project has significant mathematical content.
- **Postdoctoral researchers** and **new lecturers**, early in their careers are also encouraged to apply, and should note this on the application form.
- Only **one** application should be submitted by a supervisor.
- Normally no more than **four** awards will be made to an individual department or subject area within multidisciplinary departments or schools. Please bear in mind that this is a national scheme with a limited number of bursaries.
- Bursaries will only be granted for the student named on the application form; awards are not transferable between students.

How to apply

- Application forms can be downloaded from the Society's website: www.lms.ac.uk/content/grants.
- Applications must be made by the project supervisor on behalf of the student, and not by the student.
- Applications should be discussed with the nominated student, who should also contribute to the project design.
- Applications should include the student's academic record and a supporting statement from his/her academic tutor.
- Applications must be signed by the Head of Department to confirm his/her approval for the award to be administered by the department. (*Awards are not offered directly to individual researchers but to the institutions to which they belong.*)

Further information including the guidelines on *How to Apply* are available from the Society website: www.lms.ac.uk/content/grants. Queries may also be addressed to Katy Henderson (urb@lms.ac.uk).

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of choice over where to publish, and whether they opt for the Gold or Green route to open access. The recent Finch group Review of Progress adopts the same position. Our report considered such freedom of choice to be fundamental, and it is a positive development that there is consensus from the government, the Finch group and RCUK on this point.

- The government's decision to commission a study to assess the feasibility of a full cost benefit analysis of its own open access policy. The government announced its open access policy 16 months ago. The delay in undertaking a full cost benefit analysis inevitably raises questions about the extent to which the government's open access policy is evidence based".

The full report is available at <http://tinyurl.com/lesmh59>.

Dr John Johnston
Joint Promotion of Mathematics

10 ICM 2014

23 LMS Travel Grants

The London Mathematical Society has set aside funds to be used for making grants to support the attendance of UK-based mathematicians at the International Congress of Mathematicians, Seoul, 13–21 August 2014 (www.icm2014.org).

The Society would particularly like to support those mathematicians at an early stage in their career, including postdocs.

To apply, please complete the application form (which can be downloaded from the Society's website www.lms.ac.uk/ICM2014LMSTravelGrants) and return to Elizabeth Fisher, ICM 2014 Travel Grants, London Mathematical Society, De Morgan House, 57–58 Russell Square, London WC1B 4HS.

You do not need to be an LMS member to apply. Deadline: 14 February 2014. Applicants will be informed of the outcome by mid-March.

43 LMS GRANT SCHEMES

Applications are invited for consideration at the next round of grant awarding.

46 LMS Research Grants

Deadline 31 January 2014 (www.lms.ac.uk/content/research-grants)

- **Conference Grants** (Scheme 1) up to **£7,000** 50
- **Celebrating New Appointments** (Scheme 1) **£600** 51
- **Visits to the UK** (Scheme 2) up to **£1,500** 52
- **Research in Pairs** (Scheme 4) up to **£1,200** 53
- **International Short Visits** (Scheme 5) up to **£3,000** 54
- **Postgraduate Conferences** (Scheme 8) up to **£4,000**. 55

Young British and Russian Mathematicians Grant Scheme

Deadline 31 January 2014 (www.lms.ac.uk/grants/international-grants#YBR)

Visits to Russia—up to **£500** for travel costs of young British postdoctoral mathematicians to visit Russia to give a series of survey lectures on the work of their school.

Visits to Britain—up to **£1,500** to host a young Russian postdoctoral mathematician to give a series of survey lectures on the work of their Russian seminar.

Spitalfields Days

Deadline 31 January 2014 (www.lms.ac.uk/content/spitalfields-days#applications)

Grants of up to **£1,000** are available to support an LMS Spitalfields Day, which is usually associated with a long-term symposium on a specialist topic at a UK university. Selected participants, often distinguished experts from overseas, give survey lectures (or other types of lecture accessible to a general mathematical audience) on topics in the field of the symposium.

Childcare Grants

Applications accepted all year round (www.lms.ac.uk/content/childcare-supplementary-grants). Up to **£200** supplementary childcare grants for parents to enable parents to attend conferences and research meetings.

Grace Chisholm Young Fellowships

Applications accepted all year round (lms.ac.uk/grants/grace-chisholm-young-fellowships). Each year, the Society offers two fellowships of **£1,000** (consisting of **£500** personal support and **£500** contribution to a host institution) to mathematicians who need support when their

cont'd p.12



LMS PRIZES 2014 Call for Nominations

The London Mathematical Society welcomes nominations for the 2014 prizes, to recognise and celebrate achievements in and contributions to mathematics.

In 2014 the LMS Council expects to award:

- **The Polya Prize**—in recognition of outstanding creativity in, imaginative exposition of, or distinguished contribution to, mathematics within the United Kingdom.
- **The Fröhlich Prize**—for original and extremely innovative work in any branch of mathematics.
- **The Senior Berwick Prize**—awarded in recognition of an outstanding piece of mathematical research published by the Society during the eight years ending on 31 December 2013.
- **The Senior Anne Bennett Prize**—for work in, influence on or service to mathematics, particularly in relation to advancing the careers of women in mathematics.
- **The Whitehead Prizes** for work in and influence on mathematics.

For further information and nomination forms, please visit the LMS website (www.lms.ac.uk/content/nominations-lms-prizes) or contact Duncan Turton, Secretary to the Prizes Committee at the Society (tel.: 020 7927 0801. email: prizes@lms.ac.uk).

The Prizes Committee is keen to increase the number of nominations it receives and, in particular, the number of nominations for women, which are disproportionately low each year. The prize regulations refer to the concept of 'academic age'—rather than date of birth—in order to take account more fully of broken career patterns.

Closing date for nominations
Monday 20 January 2014

mathematical career is interrupted by family responsibilities, relocation of partner, or other similar circumstance.

Research Workshop Grants

Apply 12 months in advance of the workshop (www.lms.ac.uk/content/research-workshops-grants). Applications can be between **£1,000** and **£10,000**. Typically awards are made between **£3,000–£5,000**.

LMS COUNCIL DIARY

15 November 2013

A personal view

Due to the AGM in the afternoon, this was, as is customary, a relatively short meeting. With the change of Presidency imminent, it was the last meeting with the current President, Graeme Segal, in the chair, and it began as usual with the President's business. Among the items that Graeme brought to our attention was an email he had received from Professor Michael Atiyah regarding the low level of attendance from UK students at the Heidelberg Laureate Forum (www.heidelberg-laureate-forum.org). Applications for 2014 having just opened (see page 13), we agreed that where possible the Society would try to promote the Forum, although recognising that the way participants were recruited somewhat limited our ability to encourage attendance.

The Publications Secretary, John Jones, presented a draft Ethical Policy, agreed by Publications Committee, for consideration by Council. The Policy, tailored for authors, referees, editors and publishing staff in relation to the Society's journals, engendered a lively discussion, particularly in connection with the expected role of referees. It was noted that the Policy needed to accurately reflect practice so that editors and referees could sign up to it. Council agreed that the Policy should be redrafted to take into account the various points raised in the discussion, and brought back for reconsideration at the January Council meeting.

We received two formal proposals for consideration from the Education Secretary, Alice

Rogers. The first, which was further to Council's previous discussions, was for the Society to host annual LMS 150th Anniversary Undergraduate Summer Schools starting in the summer of 2015. It was agreed that applicants would not be able to participate both in a Summer School and in the Undergraduate Bursaries Scheme, although this was not thought to be a problem since it was felt that the two were sufficiently distinct so as to attract different applicants. It was further agreed that when deciding on participants for the Summer Schools the Committee should take into consideration the need to have an overall gender and geographical balance. It is expected that the event would move around institutions in a similar fashion to the BMC. Council warmly welcomed the proposal and agreed to support the principle of funding the Summer Schools, subject to consideration of the Society's revised budgets at the next Council meeting in February 2014.

The second proposal from the Education Secretary was for a new grant scheme for mathematics teachers, to facilitate Continuing Professional Development for mathematics educators. It was noted that this was a trial scheme and would be reviewed in due course. Council again warmly welcomed the proposal, and agreed similar in principle support to fund the scheme as above.

Our last item for discussion was a draft letter to the IMU produced by the President Designate, Terry Lyons, in which Terry was seeking to encourage the IMU to consider the suitability of its processes for achieving gender, regional and subject balance in its programmes. While some members of Council felt that the IMU already took into consideration these issues on its panels, others felt that the imbalance was such that it was worth drawing it to attention, and that doing so could help the IMU review and develop its practices. It was agreed that the letter, with a few minor amendments, would be sent for approval to the International Affairs Committee, to then be sent to the IMU.

The Treasurer presented the list of applicants for membership. This month there were 98 in total across the different categories—could this be a record? It is all the more gratifying to see

such a high number, given that it is the second consecutive month that we have had a healthy intake of new members.

Finally, the President expressed his gratitude and appreciation on behalf of Council for the contributions of John Jones (Publications Secretary), Simon Donaldson and Ari Laptev to the Society during their time on Council. The President Designate responded with very warm thanks to Graeme Segal for his dedicated and valuable work as President, and his commitment to and external representation of the Society.

June Barrow-Green

HEIDELBERG LAUREATE FORUM 2014

The call for applications for the 2014 Heidelberg Laureate Forum is now open. The Heidelberg Laureate Forum is a unique opportunity for excellent young mathematicians and computer scientists to meet eminent experts from both fields in a very special environment. The first Forum took place in September 2013 and brought together outstanding students in mathematics and computer science with winners of the most prestigious awards in these two disciplines: Abel, Fields, Nevanlinna and Turing.

More information about the Heidelberg Laureate Forum is available at www.heidelberg-laureate-forum.org. Information on applications is available at <http://tinyurl.com/p87cn63>. The deadline for applications is 28 February 2014.

LMS 150TH ANNIVERSARY POSTDOCTORAL MOBILITY GRANTS

2014–15 Awards

The London Mathematical Society is pleased to announce the launch of a new grants scheme to celebrate its 150th anniversary in 2015. Up to £9,200 will be awarded to mathematicians of excellent promise. The purpose of the grants is to support a period of study and research in mathematics between three and six months in

the academic year 2014–15 at one or more institutions other than the holder's home institution. They are intended to support promising researchers during the transitional period between having submitted their thesis and the start of their first postdoctoral employment.

The value of the grant will be calculated at £1,200 per month plus a travel allowance of up to £2,000.

At the time of the closing date applicants have to be UK residents. Successful candidates must have submitted their thesis within 12 months before the start of their grant period. Grant holders are allowed to teach up to three hours a week. Otherwise they are expected to spend their working time on study and research.

Candidates are asked to provide with their application:

- a completed application form;
- a cover letter;
- a CV including a list of publications (maximum two A4 pages);
- a research proposal including a rationale for the choice of institution(s) to be visited (maximum three A4 pages);
- at least two letters of reference, which should be emailed by referees directly to the LMS (to the email address below) by the closing date;
- and letter(s) of support from the host(s) at the institution(s) where the proposed visit will take place; it is expected that host institutions provide the grant holder with office space and access to computing and library facilities.

These grants have been established by the LMS to mark its 150th anniversary. They will be awarded for the academic years 2014–15 and 2015–16.

Applications should be sent by Friday 25 April 2014 preferably by email to: pmg@lms.ac.uk (posted applications will be accepted and may be sent to: Katy Henderson, Postdoctoral Mobility Grants, The London Mathematical Society, De Morgan House, 57–58 Russell Square, London WC1B 4HS).

Queries should be referred to Katy Henderson: pmg@lms.ac.uk, tel.: +44 (0)20 7927 0809.

Applicants will be notified of the outcome of their application in late May 2014.



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Professor of Applied Mathematics

The Department of Mathematics (www.math.ethz.ch) at ETH Zurich invites applications for the above-mentioned position. The vacant position is within the Seminar for Applied Mathematics (www.sam.math.ethz.ch).

The successful candidate's mathematical results should have received wide international recognition. Her or his results should be landmark contributions to mathematical modelling and/or efficient numerical simulation in engineering and the sciences. A strong algorithmic and computational component in her or his mathematical research is expected. The candidate should have demonstrated proficiency in conducting pioneering projects in applied mathematics.

Together with other members of the Department of Mathematics, the new professor will be responsible for teaching undergraduate level courses (German or English) and graduate level courses (English) for students of Mathematics, Computational Science and Engineering (CSE), and other sciences.

Please apply online at www.facultyaffairs.ethz.ch

Applications should include a curriculum vitae, a list of publications, and a statement of your future research and teaching interests. The letter of application should be addressed to the President of ETH Zurich, Prof. Dr. Ralph Eichler. The closing date for applications is 31 March 2014. ETH Zurich is an equal opportunity and family friendly employer and is further responsive to the needs of dual career couples. In order to increase the number of women in leading academic positions, we specifically encourage women to apply.

Mathematics of Planet Earth

EPSRC
Centre for
Doctoral
Training

We are seeking excellent candidates for 12 fully funded PhD positions, as part of the first cohort of the newly established **EPSRC Centre for Doctoral Training (CDT) in the Mathematics of Planet Earth (MPE)**, jointly run by Imperial College London and the University of Reading. The centre offers an innovative four year PhD programme in Mathematics and its applications to weather, oceans & climate science, with the first year leading to an MRes (Masters by Research) course.

UK and EU students with a background in the mathematical and physical sciences are eligible for full funding, and exceptional international students are also encouraged to apply. Areas of research include Statistics, Probability, Fluid Mechanics, Dynamical Systems, Numerical Analysis, Scientific Computing and all PhD topics will share relevance to research in weather, oceans & climate. Successful applicants will have (or expect to receive) a first class honours degree in Maths, Statistics, Physics or closely related subject.

The deadline for submitting the complete applications is **31 January 2014**. Further details on the programme and the application procedure can be obtained at www.mpecdt.org

www.mpecdt.org



LMS GRADUATE STUDENT MEETING

Report

The 2013 LMS Graduate Student Meeting was held at CIPR, Russell Square, London, on Friday 15 November. In the afternoon the meeting was followed by the LMS Annual General Meeting. The Graduate Student Meeting was organized by Professor Richard Thomas with assistance from the LMS Membership and Activities Officer, Elizabeth Fisher. The meeting was attended by close to 50 graduate students from across the UK. There were 12 talks offered by graduate students and two more talks by Professor Richard Thomas and Professor David Evans. The first talk opening the meeting was by Professor Richard Thomas, who gave an introduction to aspects of geometric quantisation.

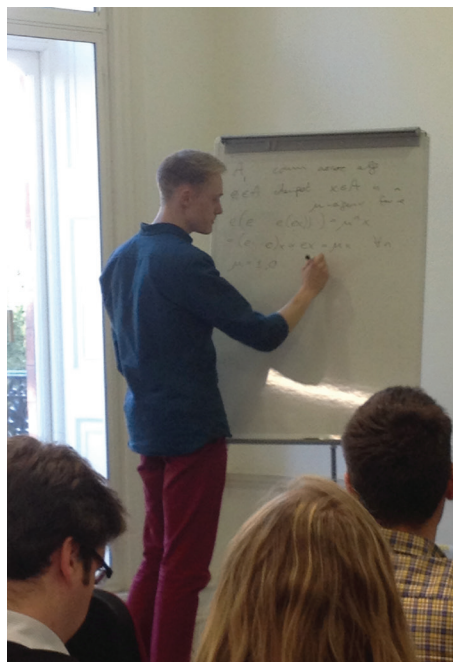
After Professor Thomas's talk there was a brief coffee break before continuing with the sessions of talks by graduate students. These talks were divided into two parallel

sessions, one taking place in the Russell Room and the other in the Charter Room. Each of the talks was 15 minutes long and the aim was to communicate a mathematical idea to a wide audience of graduate students from different areas of mathematics.

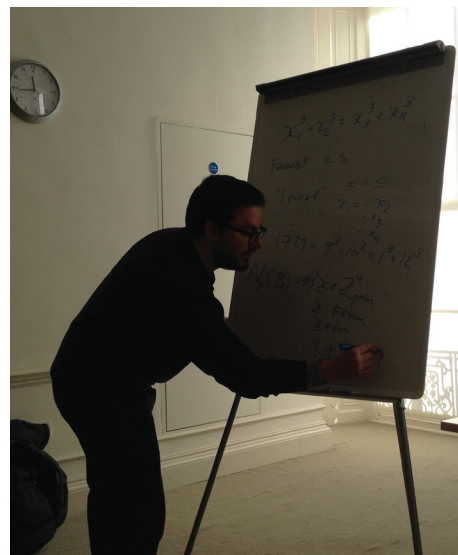
The Russell Room session

In the Russell Room session there were six talks, which ranged from number theory to algebraic geometry and algebraic topology.

- The first to speak in this session was Andrea Fanelli, who gave a talk in algebraic geometry about a surface in positive characteristic.
- Efthymios Sofos talked about the Manin conjecture, illustrating his talk with an example of a Fermat Cubic surface. Sofos also talked about different bounds for counting rational points on such a surface.
- Carmen Rovi gave a talk in algebraic topology making an exposition of the develop-



Felix Rehren



Efthymios Sofos

ment of the 60-year-old problem of the multiplicativity of the signature of fibre bundles and gave a view of her current progress on research on this problem.

- Thomas Coyne talked about singular chains on topological stacks. In his talk Coyne gave definitions of the idea of orbifold and stacks.
- Abimbola Abolarinwa gave a talk about bounds on the conjugate heat kernel along Ricci flow.

The session concluded with a talk by George Simpson about the Banach-Mazur game and Kakeya sets. Simpson gave definitions of the Kakeya set, talked about the construction of the Perron-tree and explained how his work could be related to other mathematical ideas.

The Charter Room session

In the Charter Room session there were also six talks encompassing topics in group theory, Hopf algebras, Jordan algebras and fractals.

- The first talk was offered by Alessandro Paolini who addressed classical problems in Lie theory and gave new results on the Gelfand-Graev algebra of a Chevalley group.
- Chimere Anabanti talked about free groups, focusing on the Whitehead algorithm and its consequences for free groups. Chimere presented examples illustrating

this algorithm.

- Felix Rehren talked about axial algebras and gave definitions of Jordan algebras and some applications.
- Sandeep Murthy gave a talk on TPP triples and finite groups where he presented some new results about combinatorial methods applied to generalisations of the dihedral group.
- Ana Rovi spoke about Hopf algebroids, a generalisation of Hopf algebras and how Lie-Rinehart algebras provide a fundamental example of them. She presented some new results which involve Jacobi algebras.
- Lastly, David Martí Pete talked about escaping points of a transcendental function.

It was particularly enjoyable that after the talks there was ample time for discussion over lunch, which was provided in the common room. After lunch prizes were awarded to two talks, one from each of the parallel sessions. The prizes were awarded to Efthymios Sofos and Felix Rehren for clear explanation of a mathematical idea not requiring specialist background.

To close the meeting Professor David Evans gave a talk about Operator Algebras and Noncommutative Geometry.

Ana Rovi (Glasgow University)

Carmen Rovi (Edinburgh University)



The participants

RECORDS OF PROCEEDINGS AT MEETINGS

ANNUAL GENERAL MEETING AND SOCIETY MEETING OF THE LONDON MATHEMATICAL SOCIETY

held on Friday 15 November 2013 at the Institute of Education, London. About 200 members and visitors were present for all or part of the meeting.

The meeting began at 3:00 pm, with the President, Dr Graeme Segal, FRS, in the Chair. Members who had not yet voted were invited to hand their ballot papers to the Scrutineers, Dr Don Collins and Professor Chris Lance.

The Vice-President Professor John Greenlees presented a report on the Society's activities and the President invited questions. Copies of the Annual Review for 2012/13 were made available.

The Treasurer, Professor Robert Curtis, presented his report on the Society's finances during the 2012/13 financial year and the President invited questions.

Copies of the Trustees Report for 2012/13 were made available and the President invited members to adopt the Trustees Report for 2012/13 by a show of hands. The Trustees Report for 2012/13 was adopted.

The President proposed Messrs Kingston Smith be re-appointed as auditors for 2013/14 and invited members to approve the re-appointment by a show of hands. Messrs Kingston Smith were re-appointed as auditors for 2013/14.

The President, on Council's behalf, presented certificates to the 2013 Society Prize-winners:

De Morgan Medal: Professor John Thompson, FRS;

Senior Whitehead Prize: Professor Frances Kirwan, FRS;

Naylor Prize and Lectureship in Applied Mathematics:

Professor Nick Trefethen, FRS

Whitehead Prizes: Professor Luis Alday, Dr Andre Neves and Dr Tom Sanders.

The winner of the fourth Whitehead Prize, Dr Corinna Ulcigrai, was unable to attend to collect her prize.

Forty four people were elected to Ordinary Membership: Robin Arthan, Raphael Assier, Mark Baldwin, Paul Bankston, Lloyd Bridge, Tom Bridgeland, Alexey Chernov, Jamshid Debrakhshan, Richard Durbin, Ulf Ehrenmark, Richard Elwes, Anton Evseev, Andrew Ferguson, Ghislain Fourier, Stephen Garrett, Dirk Henning, Robin Hillier, Anna Kirpichnikova, Matthew Lettington, Ying-Fen Lin, Eleanor Lingham, Mark MacDonald, Spencer Madamedon, Gregory Maloney, Robb McDonald, Michael Melgaard, Nikos Kavallaris, David Penazzi, Danila Prikazchikov, Mohamed Pujeh, Singharathna Podiralahamy Rathnayaka Mudiyansele, Ronald Reid-Edwards, Daniel Robertz, Jesus Rogel-Salazar, Fionntan Roukema, Nawal Hussein Ballal Siddig, Klaas Rienk Sijbrandij, Jozef Sirán, Kathleen Steinhofel, Matthew Towers, Paul Truman, Charles Vial, Chris Wendl, Martin Widmer.

Fifty one people were elected to Associate Membership: Ah Lam Alghanmi, Luke

Bacon, Laura Beaumont, Luke Berry, Benjamin Brown, Alice Carter, Mark Chandler, Tom Collins, Anne-Marie Cusack, Claire Davies, Clark Diamond, Vasiliki Evdoridou, Gregory Fenn, Aimie Finlayson, Anthony Gardiner, Michal Gnaick, David Goodrich, Sarah Harrison, Robert Heck, Donna Hodges, Rachael Holt, Spencer Hughes, Matthew Jacques, Omolade Kadiri, Anastasia Kisil, Flavia Lapis, Elena Louca, David Marti Pete, Siddiqua Mazhar, Brendan McLoughlin, David McNulty, Ruth Neve, Esther Nikansah, Atinuke Nwaoha, Joanne Partinston, James Pickinson, Dulip Piyaratne, Kirsty Prest, Joshua Prettyman, Bootan Rahman, James Robson, Nicole Sears, George Simpson, Sheila Smitheman, Sapna Somani, Michael Stephens, Kyriakos Tsafaras, Antony Vennard, Robert Wallis, Paul Wedrich, Heather Whitehouse, Richard Whiteman.

Two people were elected to Reciprocity Membership: Hung Pham and Chandrasekar Vadivel.

Thirteen members signed the book and were admitted to the Society.

The President announced that the next meeting of the Society would be in Swansea on 16 December 2013 as part of the South West and South Wales Regional Meeting and Workshop on Categorical and Homological Methods in Hopf Algebras. The following Society Meeting would be in York on 28 February 2014 and would include the Mary Cartwright Lecture.

Professor Simon Donaldson, FRS, gave a lecture on Geometry of Kahler Metric.

After tea, Dr Collins announced the results of the ballot. The following Officers and Members of the Council were elected.

President: Terry Lyons;

Vice-Presidents: Ken Brown, John Greenlees;

Treasurer: Robert Curtis;

General Secretary: Stephen Huggett;

Publications Secretary: John Hunton;

Programme Secretary: Robert Wilson;

Education Secretary: Alice Rogers;

Members-at-Large of Council (for two year terms): Francis Clarke, David Evans, Elizabeth Mansfield, Gwyneth Stallard, Iain A. Stewart;

Member-at-Large of Council (Librarian): June Barrow-Green.

Six Members-at-large who were elected for two years in 2012 have a year left to serve: Catherine Hobbs, Beatrice Pelloni, Colva Roney-Dougal, Michael Singer, Ulrike Tillmann, Alexander Veselov.

The following were elected to the Nominating Committee: Martin Bridson and Paul Glendinning.

The newly-elected President, Professor Terry Lyons, FRS, took the Chair.

Dr Graeme Segal, FRS, gave the Presidential Address on Space and Spaces.

After the meeting, a reception was held at De Morgan House for 150 people, followed by the Annual Dinner, which was held at the Montague Hotel and attended by 90 people.

PRESENTATION OF CERTIFICATES TO THE 2013 PRIZE WINNERS AT THE LMS AGM



Professor John Thompson, FRS
De Morgan Medal



Professor Frances Kirwan, FRS
Senior Whitehead Prize



Professor Nick Trefethen, FRS
Naylor Prize and Lectureship in
Applied Mathematics



Professor Luis Alday
Whitehead Prize



Dr Andre Neves
Whitehead Prize



Dr Tom Sanders
Whitehead Prize

LMS ANNUAL GENERAL MEETING

Report

The LMS Annual General Meeting was held on Friday 15 November 2013, at the Institute of Education in London, with talks by Simon Donaldson and the outgoing LMS President, Graeme Segal. Attendance was good, in part because of the graduate student meeting organized on Friday morning by Richard Thomas and David Evans.

Thanks to the efforts of the LMS Treasurer and other Council members, well over a hundred new LMS members were announced at this meeting, a remarkable success. About 10 new members were present and signed the LMS members' book.

The 2013 LMS prizes were presented, and the LMS election results were announced. Graeme Segal handed over his medal of office to the new LMS president, Terry Lyons.

Simon Donaldson spoke on Geometry of Kahler metrics. Donaldson discussed two ideas he had learned from Graeme Segal's lecture courses at Oxford in the early 1980s. Donaldson explained the role of these ideas in his recent outstanding work with Xiuxiong Chen and Song Sun, proving Yau's conjecture which characterizes the Kahler manifolds that have a Kahler-Einstein metric with positive Ricci curvature. A Kahler-Einstein metric can be considered the best possible metric on a complex manifold, if it exists.

The argument of Chen-Donaldson-Sun involves trying to move a given Kahler metric towards a Kahler-Einstein metric. The first idea introduced by Segal suggests where a Kahler-Einstein metric might be.

This first idea is that of a complexified diffeomorphism group. In general, the complexification $G(\mathbb{C})$ of a Lie group G is what you expect: a complex Lie group whose Lie algebra is the original Lie algebra tensored with the complex numbers. For example, the complexification of the unitary group $U(n)$ is the general linear group $GL(n, \mathbb{C})$. For the diffeomorphism group of the circle, the complexification does not exist as a group,

but rather as a semigroup: the set of 'annuli with parametrised boundary'. Segal used it to study conformal field theory and loop groups.

The connection to Donaldson's work is that the space of Kahler metrics on a symplectic manifold X can be viewed as the symmetric space $G(\mathbb{C})/G$, where G is the symplectomorphism group of X . Finding a Kahler-Einstein metric on X amounts to minimizing a certain function on this space, and this gives an idea of the direction to start moving an initial Kahler metric. Despite some partial results, the analysis is hard enough that this point of view plays only a suggestive role in Chen-Donaldson-Sun's proof of Yau's conjecture. Even the problem of connecting two points in the space of Kahler metrics by a smooth geodesic remains largely open.

The second idea is to 'lift' the relation between classical and quantum mechanics to a relation between symplectic manifolds and Hilbert spaces. The slogan emphasized by Segal was that there is 'approximately one basis element (of the Hilbert space) per unit volume (of the symplectic manifold)'. This provides a physical 'explanation' for the Riemann-Roch theorem in algebraic geometry, which relates the dimension of the space of sections of an ample line bundle to the volume of the corresponding Kahler metric.

When Chen-Donaldson-Sun try to find a Kahler-Einstein metric on a given manifold, they produce a sequence of Kahler metrics which either converge to a Kahler-Einstein metric or acquire some kind of singularities. In the second case, the manifold itself is converging to a different, singular space. The problem is that, at first sight, the limiting space could be a fairly arbitrary metric space.

Chen-Donaldson-Sun were able to maintain precise control on the relation between the volume of a Kahler metric and the space of sections (which encodes the equations of an algebraic variety) as the metric acquires singularities, under appropriate bounds on the Ricci curvature. The remarkable result was that, under appropriate bounds on the Ricci curvature, the limiting space had to be a

1 complex algebraic variety.
 2 Graeme Segal's Presidential Address was on
 3 Space and spaces. It was about several gener-
 4 alizations of the notion of space, motivated
 5 both by physics and by the internal devel-
 6 opment of mathematics. Segal emphasized
 7 the line of development which goes from
 8 the definition of the real numbers in the
 9 19th century, to the definition of a topo-
 10 logical space, and on to homotopy theory.
 11 A homotopy type is a precise notion of the
 12 'global shape' of a topological space, with all
 13 the local properties no longer visible.
 14 Segal turned to noncommutative gener-
 15 alization of spaces, starting with orbifolds or
 16 stacks, and moving on to more general non-
 17 commutative rings. Following an observation
 18 by Freeman Dyson, Segal explained how the
 19 noncommutative nature of space in quantum
 20 field theory is an essential part of why the
 21 'waves' of quantum field theory appear to
 22 us as discrete particles. A basic algebraic
 23 model for the situation is the Stone-von
 24 Neumann theorem, saying that a noncom-
 25 mutative analogue of a polynomial algebra

(the Heisenberg algebra) has representations
 indexed by the natural numbers, whereas the
 corresponding commutative ring would have
 a continuous family of representations.

After the talk, Terry Lyons asked Segal: why
 should we define 'noncommutative spaces'
 to describe the quotient space by a group
 that does not act freely, or the space of leaves
 of a foliation? Why not just say that we are
 studying group actions, for example? Segal
 explained the benefits of having a category
 of 'spaces'; we can recognize the same space
 as the quotient of different group actions,
 for example.

The day ended with a reception at De
 Morgan House and the LMS Annual Dinner.

Burt Totaro
 University of Cambridge

MATHEMATICS RESEARCH BEYOND THE BLACKBOARD

The LMS Computer Colloquium 2013 *Math-*
ematics Research Beyond the Blackboard was
 held on 29 October at De Morgan House,

LMS SOCIETY MEETING AT THE BMC

8 April 2014 at 11.30 am

Queen Mary, University of London

Claire Voisin

(CNRS and École Polytechnique)



Claire Voisin

The British Mathematical Colloquium will take place in the School of Mathematics, Queen
 Mary, University of London, from 7 to 10 April 2014.

The first talk will start at 15:30 on Monday 7 April, and the last talk will end at 12:30 on
 Thursday 10 April.

To register, visit www.maths.qmul.ac.uk/bmc2014/registration.

Early bird registration closes on 14 February 2014.

London, attended by 45 people. The speakers
 were John Harrison (Intel Corporation;
 'Computer proofs, where we are and where
 we are going'), Nick Trefethen (University
 of Oxford; 'Numerical computation with
 functions instead of numbers', Ursula Martin
 (QMUL; 'Mathematical practice, crowdsourc-
 ing, and social machines') and Steve Linton
 (University of St Andrews; 'Experiment and
 exploration in algebra and combinatorics').

Report

I have just started my PhD, which has a large
 amount of numerical analysis content, and
 the LMS Computer Science Day was a real
 eye-opener. My project focuses on improving
 a method, rather than solving a problem
 —aiming to help the computer as much as
 possible, using theory to reduce the compu-
 tational cost of finding a solution. Before my
 day at the LMS, I did not realise the extent
 to which the converse is also true; modern
 technology helps mathematicians in terms of
 theory, proof, verification and collaboration.
 These were areas of computer mathematics
 of which I was completely unaware. Much
 of the day was about demonstrating what
 is currently (and could someday) be possible,
 rather than referring in detail to any particu-
 lar field of mathematics, which suited me
 very well. As the discussion of modern tech-
 nology deepened, I particularly enjoyed the
 philosophical questions which arose on the
 differences between man and machine, how
 certain one can be that either are correct,
 and how best to mathematically harmonise
 the two.

Andrew Gibbs
 University of Reading

GOOD PRACTICE SCHEME WORKSHOP

Report

The London Mathematical Society hosted its
 third *Good Practice Scheme Workshop* on 31
 October 2013 at De Morgan House. The aim
 of the workshops is to provide individuals

and departments with knowledge and tools
 to use to help improve the recruitment
 and retention of women in mathemat-
 ics. The workshop particularly focused on
 Athena SWAN awards, and participants had
 the opportunity to hear about the awards
 from various perspectives. Sarah Dickinson
 (Athena SWAN Manager, Equality Challenge
 Unit) informed participants about Athena
 SWAN awards with examples of good
 practice and advice for submissions. The
 University of Oxford's Mathematical Institute
 is a recent recipient of an Athena SWAN
 bronze award and Lotti Ekert, a member of
 the Institute's Athena SWAN steering group,
 discussed their experience of submitting
 an application, which was eye-opening for
 many just starting the process. Paul Walton,
 who was Head of the Department of
 Chemistry at the University of York when it
 received the first ever departmental Athena
 SWAN Gold award, gave an inspirational talk
 on improving gender equity in academia and
 the benefits of good practice for all. Peter
 Clarkson (University of Kent), a regular panel
 member for the awards, was able to share
 hints and tips from the perspective of an
 assessor.

The event was very well attended with
 around 30 people representing over 20 in-
 stitutions including academics, departmental
 administrators and several Heads of Depart-
 ment. There was also time for networking
 between participants to share thoughts, ex-
 periences and practices. The feedback from
 the participants was very positive. Presenta-
 tions from the event can be found on the
 LMS website [www.lms.ac.uk/women/good-](http://www.lms.ac.uk/women/good-practice-scheme-events)
[practice-scheme-events](http://www.lms.ac.uk/women/good-practice-scheme-events) as well as other
 advice and material to support departments
 in their Athena SWAN submissions and good
 practices more generally.

The next Good Practice Workshop will be
 held in Manchester in April 2014. For any
 queries about the scheme please contact
womeninmaths@lms.ac.uk.

Peter Clarkson (University of Kent)
 Katy Henderson (LMS Council & Society
 Officer)

LMS—NZMS FORDER-AITKEN LECTURESHIP

UK Lecture Tour 2013: Report

The Forder-Aitken lectureship scheme is a collaboration between the London Mathematical Society and the New Zealand Mathematical Society, in which each society invites an eminent mathematician from the other country to give lectures at different universities around the country.

The 2013 LMS Aitken Lecturer was Professor Robert McLachlan (Massey University), who gave talks on Successes and Prospects of Geometric Numerical Integration at Strathclyde, Warwick, Leeds, Cambridge and Bath Universities.



Robert McLachlan

Strathclyde, 24 September

It was a pleasure for all of us to receive, and for some of us, to meet, Robert McLachlan during his LMS—NZMS Aitken lecture tour. Robert arrived in Glasgow on the Sunday night, and on Monday he visited our department where he had long discussions with different colleagues, especially Des Higham. On Tuesday he delivered a very enjoyable talk on geometric integration, where he took the time to explain from the simplest details to more challenging open problems.

This talk was again preceded and followed by long discussions with several people, who later let me know they had greatly enjoyed the talk and the chat. These discussions then continued in the local pub, and over dinner. Robert left for Edinburgh on the morning after.

Gabriel Barrenechea

Warwick, 27 September

It was a pleasure to host Rob McLachlan at Warwick during his LMS—NZMS Aitken lecture tour. He arrived in time to help celebrate the MSc results of our EPSRC Complexity Science doctoral training centre. He had good discussions, in particular with Andrew Stuart and Henry Abarbanel, who is visiting from UCSD for four months, on dynamical systems and applications. He gave an excellent Mathematics colloquium on numerical geometric integration, which attracted a large audience of staff and research students, despite the presence of a competing LMS Scheme 3 supported event in the room next door on Analysis and Geometry!

Robert MacKay

Leeds, 30 September

Robert arrived in Leeds on Saturday. He apparently still had energy left in spite of what seems a rather gruelling schedule of talks and travel, because on Sunday he went on a walk in the Pennines near Hebden Bridge.

On Monday he met and talked with various mathematicians here in Leeds with interests varying from fluids to integrable systems. The main focus of his visit was of course the delightful seminar he gave, which had the largest attendance of any seminar in the department this year.

Jitse Niesen

Cambridge, 3 October

Robert McLachlan arrived here on Thursday noon. He gave a very well-attended and well-received talk (>60 participants, a week before the term started!), which was followed (and preceded) by extended discussions with locals (Robert is well known to us and two of us, Carola Schönlieb and I, are on a joint EU–Australia–NZ research network with him) and ended by a very well-attended dinner at The Plough, to which we have invited a large number of research students and postdocs (with the above research network chipping in most of the costs). This has resulted in a lively discussion in lovely surroundings. And then, in the morning, Robert left for Bath.

Arieh Iserles

Bath, 4 October

The last stop of Robert McLachlan's Aitken Lecture-ship tour took him to the University of Bath, where he gave a special lecture in the colloquium series Landscapes in Mathematical Sciences. The talk, that touched upon such diverse topics as numerical analysis, symplectic geometry, algebra and combinatorics, was enjoyed by staff and postgraduate students from across all areas of pure and applied mathematics and statistics. Specialists in applied and numerical mathematics also appreciated the chance to discuss current problems in the field with the speaker before and after the event.

Antal Jaraí and Rob Scheichl

COLLINGWOOD LECTURE 2013 Report

Professor Peter Higgs, Nobel Prize in Physics 2013, came to Durham University on Tuesday 5 November to deliver the Collingwood Lecture 2013, only weeks after the announcement of his Nobel Prize. This was the event of the Michaelmas term and more than 500 people attended the event. The largest lecture theatre on the Science site was bursting at its seams, and the lecture was relayed using audio-visual equipment. In the days preceding the event, there was a tangible sense of excitement across the campus and the atmosphere at the lecture was electric.

The lecture, entitled 'The electroweak symmetry breaking and the Higgs boson', was delivered in two parts. The first was an excellent introduction to the Higgs mechanism that gives mass to elementary particles given by Professor Steve Abel from Durham. It put in context Peter Higgs's own account of the chronology of scientific ideas in the early sixties that culminated in 1964 with publications by two Belgian physicists, Professors Robert Brout and Francois Englert, and Peter's own work, on the symmetry breaking mechanism and the prediction of a scalar particle, now known as the Higgs boson. The discovery at CERN in 2012 of a particle 'consistent with the Higgs boson of the Standard Model' led to the Nobel Prize in Physics 2013 being shared between Francois Englert and Peter Higgs, Robert Brout having passed away in 2011.

Peter also reminded the audience of the important subsequent results obtained by Professor Tom Kibble of Imperial College London, and Professors Gerald Guralnik and Carl Hagen, which are highly relevant in the explanation of the origin of mass.

The audience, ranging from the Vice-Chancellor to undergraduates to local sixth formers and members of the general public alike, was captivated by the talks, which offered a glimpse of the dynamics of theoretical physics research processes, and of the



Sir Edward Collingwood Professor Peter Higgs

awesome experimental effort and ingenuity deployed to confirm theoretical predictions. The younger students in particular, mostly taking A-level Mathematics, Further Mathematics and/or Physics, responded enthusiastically to the lectures and were inspired by the energy of the event and, of course, by meeting one of the more unlikely heroes of contemporary culture.

The Collingwood Lecture is an annual event organised by the Department of Mathematical Sciences at Durham. It is organised in memory of Sir Edward Collingwood, FRS, a mathematician probably known best for his work on the theory of Cluster Sets. He was Chairman of the Council of Durham University from 1955 to his death in 1970. He was knighted in 1962, elected to the Royal Society in 1965 and became President of the London Mathematical Society in 1969. The lectures are given by mathematicians of international renown and are suitable for a general audience.

Anne Taormina
Durham University



The audience

EUROPEAN NEWS

DMV-Medienpreis 2013

The Medienpreis Mathematik 2013 by the Deutsche Mathematiker Vereinigung (DMV) was awarded to Gert-Martin Greuel and Andreas Matt for their work on the project IMAGINARY. The prize is awarded for outstanding contributions to the communication and popularization of mathematics. The award comes with €4,000 prize money provided by the Walter de Gruyter Stiftung in Berlin.

With unique software for everybody to visualize algebraic surfaces, with big media competitions, with worldwide exhibitions and with the internet portal 'IMAGINARY—open mathematics', the project evokes great enthusiasm for mathematics in Germany and abroad.

[Source: <http://euro-math-soc.eu/news.html>]

Show Me Your Data! What Publication Records in zbMATH Can Say About Women's Careers in Mathematics

The gender gap in academia, in particular the differences in productivity for male and female scholars and their apparent persistence over time, has been a topic of interest for the past few decades. A large body of research is devoted to finding explanations for the so-called productivity puzzle and to proposing measures for alleviating the gender imbalance, especially in STEM fields. Although the presence of women among graduate and postgraduate degree holders has increased over time, permanent positions in research and science, let alone the high-rank university appointments, are far from being proportionately distributed among men and women. For instance, the recent survey commissioned by the LMS shows that a meagre 6% of all professors in mathematics departments at British universities are women.

[Source: From an article by Helena Mihaljević-Brandt and Lucía Santamaría (both FIZ Karlsruhe, Berlin, Germany). For the full article see EMS Newsletter December 2013 pp 51-52]

Erwin Schrödinger International Institute for Mathematical Physics

In October 2010, when the Erwin Schrödinger International Institute for Mathematical Physics (ESI) had been in existence as an independent research institute since 1993, the scientific directorate and the international community of scholars had to learn with great distress of the intention of the government of Austria to cease funding for the ESI. Due to budgetary measures affecting a large number of independent research institutions in Austria, funding of the ESI would be terminated as of 1 January 2011. Since its start it was the mission of the ESI to advance research in mathematics, physics and mathematical physics at the highest international level through fruitful interaction between scientists from these disciplines. An abrupt end for the scientific activities of the Institute and the closure of the ESI appeared on the horizon. Weeks of trembling uncertainty followed, mixed with signs of a solution in which the University of Vienna would be involved. In the wake of a protest action by renowned scholars and academic institutions worldwide, an agreement was achieved in January 2011 that the ESI could continue to exist but now as a research centre ('Forschungsplattform') at the University of Vienna. As a partner in this agreement the Ministry of Science and Research (BMWF) guaranteed to fund the 'new' ESI through the University yearly with a reduced budget until 2015. At a time when pure research and scholarly activities are undervalued, the opportunities for scholars and young researchers that the Institute provides have never been more necessary. The University of Vienna took the chance and created a home for 'one of the world's leading research institutes in mathematics and theoretical physics', as Peter Goddard, the chair of the international review committee for the Institute, commissioned by the BMWF, and its members put it in 2010 in a letter to the Ministry.

[Source: EMS Newsletter December 2013 p 45]

MARY CARTWRIGHT LECTURE AND SOCIETY MEETING

Friday 28 February 2014

University of York, Ron Cooke Hub, Heslington East, YO10 5GE



3.30 Opening of the Meeting
Anne Taormina
(University of Durham)
Moonshines

4.30 Tea

5.00 Mary Cartwright Lecture
Reidun Twarock
(University of York)
*Viruses and geometry:
hidden symmetries in
virology*



Reidun Twarock
Mary Cartwright Lecturer 2014

6.00 Wine reception

To register, please contact Katy Henderson (womeninmaths@lms.ac.uk) by Friday 21 February. Late registrations for places may still be accepted, subject to availability.

The reception will be followed by a dinner at 31 Castlegate, at a cost of £35 per person, inclusive of wine. If you would like to attend the dinner, please contact Katy Henderson (womeninmaths@lms.ac.uk) by Friday 21 February.

There are limited funds available to contribute in part to the expenses of members of the Society or research students to attend the meeting. Please contact Katy Henderson (womeninmaths@lms.ac.uk) for further information.



LMS INVITED LECTURER 2014

Professor Jouko Väänänen

(University of Helsinki)

14–17 April 2014

University of East Anglia

Games, trees and models: This is a new approach to mathematical properties of uncountable structures. We relate it to certain transfinite games, mathematics of trees, and a branch of model theory called stability theory.

Foundations of mathematics and second order logic: The role of second order logic is a source of a lot of debate in the area of foundations and philosophy of mathematics. In this topic we give a mathematical approach to second order logic, using methods from the first topic, and discuss a foundational and philosophical interpretation of the results.

The mathematical theory of dependence and independence: A topic introduced by Väänänen in his 2007 monograph *Dependence Logic*. The general methodology introduced in the previous two topics is used to analyse dependence and independence concepts throughout mathematics with applications to computer science, and a number of other fields of science, where dependence and independence concepts have a crucial role.

There will also be supplementary lectures by:

- S. Abramsky (Oxford)
- J. Bagaria (ICREA, Barcelona)
- M. Dzamonja (UEA)
- D. Isaacson (Oxford)
- P. Galliani (Clausthal University of Technology)
- P. Welch (Bristol)

Lectures on April 14 will take place in London, other lectures in Norwich. University accommodation will be available. Limited financial support is available with preference given to UK research students. Please contact the organisers for further details: M.Dzamonja@uea.ac.uk

Deadline for funding: 15 February 2014.

For further details on the 2014 Invited Lectures please visit: www.uea.ac.uk/~h020/Jouko.html.

VISIT OF BRETT STEVENS

Professor Brett Stevens (Carleton University, Canada) will be visiting the UK from 21 January to 4 February 2014. His expertise is in combinatorics, in particular designs, arrays and codes, and the interaction of mathematics with other disciplines and culture. During his visit Professor Stevens will give lectures at:

- Queen Mary University of London, Centre for Discrete Mathematics Seminar, Wednesday 22 January
Combinatorial objects in reliability testing
(Contact: L. Soicher: L.H.Soicher@qmul.ac.uk)
- Queen Mary University of London, Combinatorics Study Group, Friday 24 January
Partition graphs and characterization of designs by graph homomorphisms
(Contact: L. Soicher: L.H.Soicher@qmul.ac.uk)
- Open University Winter Combinatorics Meeting, Wednesday 29 January
Optimising an imperfect tournament
(Contact: B.S. Webb: bridget.webb@open.ac.uk)
- University of South Wales, Monday 3 February
Higher dimensional sudokus, existence and constructions
(Contact S. Perkins: stephanie.perkins@southwales.ac.uk)

Further details about the visit can be obtained from Bridget Webb (bridget.webb@open.ac.uk). The visit is supported by an LMS Scheme 2 grant.

WINTER COMBINATORICS MEETING

The 15th annual *Winter Combinatorics Meeting* will take place at The Open University, Milton Keynes on Wednesday 29 January 2014. It is intended that the talks will be of interest to all those working in combinatorics or related fields. The speakers are:

- Pinar Heggernes (University of Bergen)
- Daniel Král' (University of Warwick)

- Misha Rudnev (University of Bristol)
- Alex Scott (University of Oxford)
- Brett Stevens (Carleton University)

For full details, including the schedule, titles and abstracts as they become available, see <http://wcm.open.ac.uk>. Anyone interested is welcome to attend. The meeting is supported by The Open University, the British Combinatorial Committee and an LMS Scheme 2 grant for the visit of Brett Stevens.

LMS–WIMCS ANALYSIS DAY

An *LMS–WIMCS Analysis Day* will take place at the School of Mathematics, Cardiff University, on Wednesday 15 January 2014 from 10:00 to 17:30. The meeting, which is open to all, will highlight techniques on the interface between nonlinear and linear analysis. The speakers are:

- Elaine Crooks (Swansea)
- Rolf Gohm (Aberystwyth)
- Carlo Mercuri (Swansea)
- Gennady Mishuris (Aberystwyth)
- Johannes Zimmer (Bath)

For further information visit the meeting webpage at <http://tinyurl.com/cardiffanalysis>. To register send an email, by Tuesday 7 January, to mathematics@cardiff.ac.uk with your name, affiliation and whether or not you wish to stay for dinner. The meeting is supported by an LMS Joint Research Groups in UK Scheme 3 grant and the Wales Institute of Mathematical and Computational Sciences (WIMCS).

LSD & LAW

The annual meeting *London Stringology Days* and *London Algorithmic Workshop* (LSD & LAW) will be hosted at King's College London from 6 to 7 February 2014.

LSD & LAW is a two-day meeting and the programme consists of about 25 talks, but is also devoted to new research resulting from the interactions among the participants. It welcomes participants with interests in any algorithmic aspect, theoretical or applied, 98

including: String Algorithms; Combinatorics on Words; Graph and Tree Algorithms; Bioinformatics; Computational Complexity; Natural Language Processing; and Automata Theory. Confirmed speakers include:

- Iain Stewart (Durham, UK)
- Mireille Regnier (Inria, France)
- Zsuzsanna Liptak (Verona, Italy)
- Simon Puglisi (Helsinki, Finland)
- Wojciech Rytter (Warsaw, Poland)

Anyone interested is welcome to attend. Further information can be obtained from (www.inf.kcl.ac.uk/events/LSD&LAW14/) or from Solon Pissis (solon.pissis@kcl.ac.uk). The meeting is supported by an LMS Conference grant and the Department of Informatics at King's College London.

NORRIE EVERITT MEMORIAL MEETING

30

A memorial meeting to mark the life and work of Professor Norrie Everitt, FRSE, will be held from 15 to 17 May 2014 at the School of Computer Science & Informatics at Cardiff University. Norrie was a distinguished expert in the field of spectral analysis and differential equations who died on 17 July 2011 aged 87. He made many significant contributions to such topics as the Titchmarsh-Weyl m -function, the deficiency index problem, periodic problems, and the numerical computation of eigenvalues of Sturm-Liouville problems. The meeting will focus on the following topics:

- ordinary differential equations: selfadjoint and non-selfadjoint Sturm-Liouville operators, inverse problems;
- systems of differential equations: Dirac operators and other block operator matrices;
- non-linear differential equations;
- periodic differential operators and the structure of their spectrum.

Invited speakers include:

- C. Bennewitz (Lund)
- B.M. Brown (Cardiff)
- W.D. Evans (Cardiff)
- T. Johansson (Linköping)
- H. Kalf (Münich)
- H. Langer (Vienna)

- L. Littlejohn (Baylor)
- M. Marletta (Cardiff)
- J.B. McLeod (Oxford)
- M. Plum (Karlsruhe)
- A. Pushnitski (London)
- K.M. Schmidt (Cardiff)
- A. Shkalikov (Moscow)
- C. Tretter (Berne)
- I. Wood (Canterbury)
- A Zettl (DeKalb)

The registration fee of £110 includes the conference dinner on 16 May, as well as three lunches and tea and coffee during breaks. To register your interest email Malcolm Brown (malcolm@cs.cf.ac.uk) with the subject 'WNE meeting' by 1 April, 2014. In the body of your email include your name, affiliation and any special dietary requirements. For further information visit the website at www.cs.cf.ac.uk/everittmemorial.

There is some support available for UK based research students to attend. Contact Malcolm Brown for details (malcolm@cs.cf.ac.uk). The meeting is supported by an LMS Conference grant and the Cardiff School of Mathematics.

NONLINEAR PDE AND CALCULUS OF VARIATIONS

A workshop on *Recent Advances in Nonlinear PDE and Calculus of Variations* will take place at the University of Reading from 12 to 14 February 2014. The event brings together experts working on different aspects of nonlinear partial differential equations and calculus of variations, in order to discuss the latest developments in these two interconnected disciplines. The speakers are:

- Nicholas Alikakos (Athens)
- John Ball (Oxford)
- Bernard Dacorogna (Lausanne)
- Nicolas Dirr (Cardiff)
- Georg Dolzmann (Regensburg)
- Federica Dragoni (Cardiff)
- Robert Jensen (Chicago)
- Petri Juutinen (Jyväskylä)
- Nicholas Katzourakis (Reading)
- Kostantinos Koumatos (Oxford)

- Juha Kinnunen (Aalto)
- Jan Kristensen (Oxford)
- Tristan Pryer (Reading)
- Filip Rindler (Warwick)
- Juan Manfredi (Pittsburgh)
- Eugen Varvaruca (Reading)
- Igor Velic (Zagreb)
- Changyou Wang (Kentucky)

There will be a poster session with scientific discussions on the posters as well as the preceding scientific talks of the day.

The registration fee of £30 includes the conference dinner, as well as the three lunches and all the coffee/cake breaks and the LMS membership pack. If you wish to attend contact the organiser Nikolaos Katzourakis (n.katzourakis@reading.ac.uk) by **31 January 2014**. For further information visit the website at www.personal.reading.ac.uk/~qz904942/Website_Workshop.html.

The workshop is organised by the Department of Mathematics and Statistics of the University of Reading jointly with the Oxford Centre for Nonlinear PDE of the University of Oxford, and partially supported by an LMS Conference grant.

JORDAN GEOMETRIC ANALYSIS AND APPLICATIONS

An international conference on *Jordan Geometric Analysis and Applications* will be held at the School of Mathematical Sciences, Queen Mary, University of London from 3 to 5 September 2014. Intended participants, especially research students, are invited to contact the organisers Cho-Ho Chu (c.chu@qmul.ac.uk) or Michael Mackey (mackey@ucd.ie). For detailed information visit the website at <http://banach.ucd.ie/jgaa>. The meeting is supported by an LMS Conference grant.

ASPECTS OF RANDOM WALKS

A meeting on *Aspects of Random Walks* will be held at Durham University from Monday 31 March to Thursday 3 April 2014. Thursday

3 April will incorporate a one-day event in memory of Iain MacPhee. The meeting is aimed at researchers (including postgraduate students) with an interest in random walks and related topics. The Iain MacPhee memorial event, adjacent to the random walks meeting, will be a celebration of Iain's research interests, which, in addition to random walks, included queueing theory, optimization, and other topics in probability theory and stochastic processes. The meeting will also celebrate the recent appointment of Andrew Wade. Invited speakers include:

- Stephen Connor (York)
- Codina Cotar (UCL)
- David Croydon (Warwick)
- Denis Denisov (Manchester)
- Ben Hambly (Oxford)
- Dimitri Petritis (Rennes)
- Jonty Rougier (Bristol)
- Nadia Sidorova (UCL)
- Stanislav Volkov (Lund)

If you are interested in attending please contact Andrew Wade (andrew.wade@durham.ac.uk). Funding is available to provide accommodation for a limited number of participants and to help cover the cost of travelling to Durham (preference may be given to research students, as well as to participants who register early). For further information visit the website at www.maths.dur.ac.uk/users/andrew.wade/meeting/arw.html. The meeting is supported by the Department of Mathematical Sciences, the EPSRC, and by an LMS Conference grant to celebrate new appointments.

TOMORROW'S MATHEMATICIANS TODAY

The third Undergraduate Mathematics Conference *Tomorrow's Mathematicians Today* will be held on Saturday 15 February 2014 at the University of Surrey. The keynote speaker will be Professor Luis Fernando Alday (Oxford-Mathematics), winner of a Royal Society Wolfson Research Merit Award (2013), a London Mathematical Society Whitehead prize (2013) and an MPLS Teaching Award (2013).

31

The conference is aimed at all middle and final year undergraduates, either intending to stay in academia or planning to go into the workplace. All participants will benefit from taking part, by gaining valuable experience of conference submission, presentation skills, nationwide communication and networking.

For further information and any queries contact the organisers: Alessandro Torrielli (a.torrielli@surrey.ac.uk) or Erica Tyson (Erica.Tyson@ima.org.uk) or visit the website at <http://tinyurl.com/qc8pvnn>.

The conference is organized by the Department of Mathematics of the University of Surrey, in conjunction with the Institute of Mathematics and its Applications (IMA). The conference is supported by an LMS Education Committee grant.

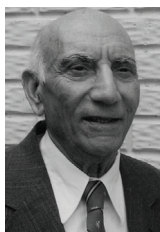
OBITUARY

22 ABOLGHASSEM GHAFFARI

Dr Abolghassem Ghaffari, who was elected a member of the London Mathematical Society on 22 May 1947, died on 5 November 2013, aged 106.

Vida Ghaffari writes: born in Tehran in 1907, he was educated at Darolfonoun School (Tehran). In 1929, he went to France and studied Mathematics and Physics at Nancy University, where he took his L-es-Sc. in Mathematics in 1932. After obtaining post-graduate diplomas in Physics, Astronomy, and Higher Analysis, he obtained in 1936 his doctorate from the Sorbonne (Doctor of Sciences with *mention très honorable*) for basic research on Mathematical Study of Brownian Motion.

Dr Ghaffari lectured as a Research Associate at King's College, London, where he received his PhD from the Mathematics Department on the Velocity-Correction Factors and the Hodograph Method in Gas Dynamics. As a Fulbright Scholar, he worked at Harvard University as a Research Associate to lecture on Differential Equations and to continue his



research on Gas Dynamics.

He was a Research Associate in Mathematics at Princeton University, and at the Institute for Advanced Study, he worked in the early 1950s with Albert Einstein on the Unified Field Theory of Gravitation and Electromagnetism. J. Robert Oppenheimer, who headed the US atom bomb program during World War II, was director of the Institute at the time and interviewed Ghaffari before the latter became a member of the Institute (Oppenheimer later befriended Ghaffari).

He lectured as a Professor of Mathematics at American University in Washington, DC and at Tehran University, where he joined the Faculty of Sciences and was appointed full Professor of Higher Analysis from 1941 to 56. In 1956, Ghaffari moved permanently to the US to take up a position as a senior mathematician at the US National Bureau of Standards. Part of his work there involved calculations of the motion of artificial satellites.

In 1964, three years into the manned space program, he joined, as aerospace scientist, the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center, where he studied the mathematical aspects of different optimization techniques involved in the Earth-Moon trajectory problems, and different analytical methods for multiple midcourse manoeuvres in interplanetary guidance. He later investigated the effects of solar radiation pressure on the Radio Astronomy Explorer Satellite Booms as well as the effects of General Relativity on the orbits of Artificial Earth Satellites.

He was awarded in Iran the Imperial Orders of the late Mohammad Reza Shah Pahlavi, and the US Special Apollo Achievement award (1969) at a White House ceremony with President Nixon. He published more than 50 papers on pure and applied mathematics in American, British, French, and Persian periodicals. In addition to two textbooks, he is author of *The Hodograph Method in Gas Dynamics* (1950).

In 2005, Ghaffari received the Distinguished Scholar award from the Association of Professors and Scholars of Iranian Heritage (APSIH)

at UCLA. In 2007, he received a proclamation from former Beverly Hills mayor and current Goodwill Ambassador Jimmy Delshad acknowledging his numerous lifetime achievements. He also recently was appointed as a Hall of Fame inductee by SINA (Spirit of Noted Achievers) at Harvard University.

He was a past member of the Iranian National Commission of UNESCO. Ghaffari was a Fellow of the New York Academy of Sciences, the Washington Academy of Sciences, and the American Association for the Advancement of Sciences and a member of the London Mathematical Society, the American Mathematical Society, The Mathematical Association of America, and the American Astronomical Society.

He is survived by his wife, Mitra, and his two daughters, Ida and Vida. He is interred at Pierce Brothers Valhalla Memorial Park in Burbank, California. In lieu of flowers, his one wish was to have a scholarship in his name for young Iranians studying Mathematics or Science. Details on the scholarship will be soon announced.

REVIEWS

THE NORM CHRONICLES by Michael Blastland and David Spiegelhalter, Profile Books, 2013, pp 328, £12.99, ISBN 978-1846686207.

The creator of Radio Four's admirable *More or Less* (MB) and the Winton Professor of the Public Understanding of Risk (DS) seek to help us quantify the risks around us. Two

key notions are the MicroMort (MM) - any experience or activity over which the chance of death is one in a million carries one MM of risk, and the MicroLife (ML)—half an hour of normal life.

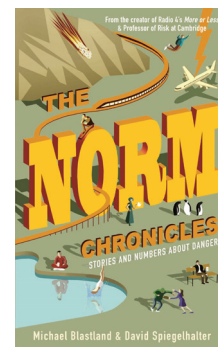
For Norm, the book's eponymous hero, just

undertaking his standard activities for one 50 day carries one MM of risk of death from 51 some dramatic incident. He is the prototypi- 52 cal UK average man: in his first year of life, he 53 survived 4300 MMs, he was safest while seven 54 years old, and, having survived the perils of 55 ages 16–24, can expect many years of healthy 56 living before his daily risk of death rises. He 57 pursues the most rational action, expecting 58 to lose one ML for each three cigarettes he 59 smokes, or each portion of red meat eaten, 60 and gain two MLs for his first 20 minutes 61 of moderate exercise each day. By contrast, 62 Prudence mollycoddles her children and 63 focuses on the worst conceivable outcome: if 64 the chance of catastrophe is one in a million, 65 she expects to be the one. Carefree Kelvin 66 can't be bothered to assess risk—he indulges 67 in casual sex, pops pills, skydives, and enjoys 68 life while it lasts. He is so blasé that it requires 69 three copies of him to survive the book. 70

Chapters generally begin with scenarios, 71 often lurid, around some or all of these 72 three people in a range of circumstances 73 including childbirth, vaccination, surgery, 74 travel, gambling, crime, unemployment, and 75 contrasts their responses. I do not find this 76 approach to be universally successful—some 77 flights of fancy go on too long—but where 78 they do succeed in grabbing our attention, 79 they can make the central message more 80 memorable. Copious notes show us where 81 to follow up the evidence behind the conclu- 82 sions. 83

Our perceptions of risk are heavily in- 84 fluenced by the reporting we experience. 85 'Another smoker dies' is not news, and, 86 despite the statistics demonstrating falling 87 levels of crime, newspaper focus on dramatic 88 events leads many to believe the contrary. 89 When two heart surgeons have respective 90 success rates of 99% and 98%, do we note 91 that similarity, or do we report that one of 92 them kills twice as many as the other? 93

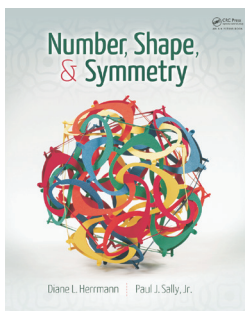
Useful comparisons, in terms of MMs and 94 MLs, are scattered throughout the book, 95 which ends with a couple of tables summariz- 96 ing the hazards and benefits of diverse events 97 or activities. It is an easy read—any tricky 98



1 maths is suppressed—and a reference point
2 for objectivity when faced with some news
3 item on the risks of cancer screening, driving
4 to work, asteroid impact, or a ridiculing of
5 'elf and safety'. The more people absorb the
6 messages in this book, the more rational will
7 be their response in our uncertain world.

8 John Haigh
9 University of Sussex

10 **NUMBER, SHAPE & SYMMETRY: An In-**
11 **roduction to**
12 **Number Theory,**
13 **Geometry, and**
14 **Group Theory** by
15 Diane L. Herrmann
16 and Paul J. Sally,
17 Jr, CRC Press 2013,
18 pp 426, US\$69.95,
19 £44.99, ISBN 978-
20 1466554641.



21 34 This is not
22 really an under-
23 graduate textbook. It emerged from work

with three different groups—none with an
obvious parallel in England: (a) talented high
school students attending a long summer
programme; (b) undergraduate non-sci-
ence majors in the University of Chicago; (c)
primary and middle school teachers attending
an extended 'professional development'
course.

The book raises a question that will have
bugged anyone who teaches introductory
abstract material to students lacking expe-
rience of the concrete models on which the
abstractions are based. How can one devote
significant time to providing background, if
this prevents one reaching the pay-off for
the abstract approach? The answer here is to
ignore the formal, abstract approach, and to
provide lots of examples rooted in calculation,
and experiences which explore the relevant
structures in a concrete way. And this makes
perfect sense for the three declared target
groups.

The subtitle calls this an introduction to
group theory, and the book duly contains no

explicit group theory at all. We meet permu-
tations and symmetries; are introduced to
cyclic groups and to small dihedral groups—
but they are all concrete. There is a defini-
tion of a group—but it serves as a checklist
for validating examples, rather than as the
basis for abstract deductions. The symmetries
of an equilateral triangle, of a square, of a
regular tetrahedron, and of a cube, are iden-
tified and listed the hard way—with the final
knob often being left only partly tied.

This process is familiar in the school
classroom (e.g. to those required to teach
'group theory' as part of Further Mathemat-
ics or the IB). But it does not transfer easily to
the page. Those wishing to carp could have

a field day. E.g. the informal definition of a
polyhedron (p. 251), or of 'convex' (p. 252), or
the 'proof' of Euler's formula (pp. 258–261)
might suffice in many classrooms—and might
even be appropriate for the target groups;
but they look bad in black and white on the
page. The teacher, like the populariser, may
sometimes have to 'lie a little'; but informal-
ity is not the same as sloppiness. Neverthe-
less one would love to see this material being
presented to teachers and to students who
might later meet an abstract mathematical
treatment.

Tony Gardiner
Birmingham

CALENDAR OF EVENTS

This calendar lists Society meetings and oth-
er mathematical events. Further informa-
tion may be obtained from the appropriate
LMS *Newsletter* whose number is given in
brackets. A fuller list is given on the Soci-
ety's website (www.lms.ac.uk/content/calendar). Please send updates and corrections to
calendar@lms.ac.uk.

JANUARY 2014

6–10 Free Boundary Problems and Related
Topics, INI, Cambridge (428)

13–15 British Postgraduate Model Theory
Conference, Leeds (429)

13–17 Inference for Change-point and
Related Processes INI Workshop,
Cambridge (428)

15 LMS–WIMCS Analysis Day, Cardiff (432)

15 Interfaces between Numerical Analysis
and Computational Statistics Meeting,
Southampton (430)

27–30 Symmetries, Differential Equations
and Applications Conference, Islamabad,
Pakistan

29 Winter Combinatorics Meeting, The
Open University (432)

FEBRUARY 2014

6–7 London Stringology Days and London
Algorithmic Workshop, King's College
London (432)

10–21 Higher Structures in Algebraic Analy-
sis Winter School and Workshop, Padova,
Italy (428)

12–14 Recent Advances in Nonlinear PDE
and Calculus of Variations Workshop, Read-
ing (432)

15 Tomorrow's Mathematicians Today Con-
ference, University of Surrey (432)

24–28 Foams and Minimal Surfaces—12
Years On, INI Workshop, Cambridge (429)

28 Mary Cartwright Lecture, York (432)

MARCH 2014

31 LMS Northern Regional Meeting, Dur-
ham (432)

31–3 April Aspects of Random Walks, Dur-
ham University (432)

APRIL 2014

1–5 Ischia Group Theory 2014, Naples, Italy
2–4 Distinguished Lecture Series 2014, Heil-
bronn Institute, Bristol

7–10 British Mathematical Colloquium,
Queen Mary, University of London (431)

8 LMS Meeting at the BMC, Queen Mary,
University of London (431)

CAMBRIDGE

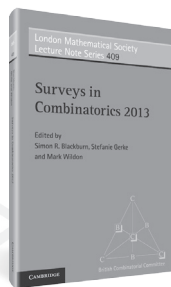
Surveys in Combinatorics 2013

Simon R. Blackburn,
Royal Holloway, University of London
Stefanie Gerke,
Royal Holloway, University of London
Mark Wildon,
Royal Holloway, University of London

- The articles within present overviews of important recent developments in different areas of combinatorics
- Most articles contain open problems which will be of interest to researchers in combinatorics and related areas
- The articles are accessible to non-experts and do not assume extensive prior knowledge

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Information Theory and Coding by Example

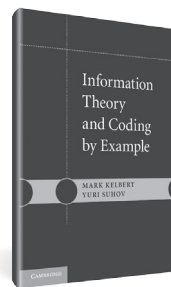
Mark Kelbert,
Swansea University

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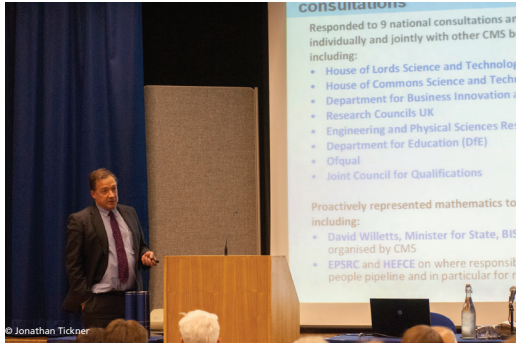
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LONDON MATHEMATICAL SOCIETY AGM

15 November 2013

(report on page 21)



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Graeme Segal and Terry Lyons



Sir Simon Donaldson



Audience



Signing of the LMS members' book